

ORIGINAL

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of)

Inquiry Regarding Software Defined)
Radios)

ET Docket No. 00-47

To: The Commission

**COMMENTS
OF THE
AMERICAN PETROLEUM INSTITUTE**

The American Petroleum Institute ("API"), by its attorneys and pursuant to Section 1.430 of the Rules and Regulations of the Federal Communications Commission ("Commission"), respectfully submits the following Comments in response to the Commission's Notice of Inquiry ("Notice")^{1/} in the above-referenced proceeding. The Notice requests comment on the development and use of Software Defined Radios ("SDRs").

I. BACKGROUND

1. API is a national trade association representing approximately 350 companies involved in all phases of the petroleum and natural gas industries,

^{1/} 65 Fed. Reg. 17246 (March 31, 2000).

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including exploration, production, refining, marketing and transportation of petroleum, petroleum products and natural gas. The API Telecommunications Committee is one of the standing committees of the organization's Information Systems Committee. The Telecommunications Committee evaluates and develops responses to state and federal proposals affecting telecommunications facilities used in the oil and gas industries.

2. API's Telecommunications Committee is supported and sustained by licensees that are authorized by the Commission to operate, among other telecommunications systems, facilities in the Private Land Mobile Radio Service ("PLMRS") and the Private Operational-Fixed Microwave Services ("POFS"). API's members utilize PLMRS systems, for example, to support the search for and production of oil and natural gas, to ensure the safe pipeline transmission of natural gas, crude oil and refined petroleum products, to process and refine these energy sources and to facilitate their ultimate delivery to industrial, commercial and residential customers. Likewise, POFS systems serve a variety of vital telecommunications requirements, including communications to remote oil and gas exploration and production sites for voice and data applications, for supervisory control and data acquisition systems, to communicate with refineries and to extend circuits to remote pipeline pump and compressor stations.

3. The private radio systems operated by API members are absolutely essential to protecting the safety of life, health, and property, both in connection with members' everyday operations and during responses to emergency incidents. Due to the importance of these radio systems to the operations of its members, API has participated in all of the Commission's major rule making proceedings addressing use of the spectrum in the private radio services.

II. COMMENTS

A. **API Supports, With Certain Reservations, the Development of Software Defined Radio for Enhanced Spectrum Efficiency**

4. The Commission stated in its Notice that SDRs have the potential to change the way users communicate across traditional services, as well as promote more efficiency in the use of spectrum. (Notice at ¶ 7.) The Commission also suggested that SDRs could significantly affect a number of Commission functions, such as spectrum allocation and assignment, and equipment approval. (*Id.*) While API shares the Commission's belief that SDRs may enhance spectrum efficiency and the interoperability of communications systems, API urges the Commission to implement reasonable safeguards aimed at ensuring that licensees do not encounter interference from SDR users and that reliable telecommunications systems continue to be available to licensed users for vital public safety-related needs.

5. With regard to spectrum efficiency and interoperability, API agrees that there may be distinct advantages to not being limited to a single fixed frequency band or to a specified group of channels within a frequency band. As the Commission noted, radio users could benefit significantly from the ability to find a “hole” within the spectrum for use (Notice at ¶ 14) or the ability to efficiently lease unused spectrum to other users (Notice at ¶ 15). The Commission, however, should be cautious not to create a “free for all” in spectrum allocation by disregarding *in toto* the current licensing process. Should it decide to change the manner in which it currently allocates and assigns spectrum, the Commission should seek to ensure that radio systems that serve public safety or environmental functions do not risk interference from SDR equipment employing spectrum-monitoring “intelligence.” (Notice at ¶ 14.)

B. API Supports the Use of Software Defined Radio to Improve Interoperability as well as Operational Capacity in Responding to Emergency Situations

6. The Commission has suggested that the ability of SDRs to change frequency and transmission formats may provide a means of overcoming the current inability of different wireless systems to communicate with one another. (Notice at ¶ 10.) API agrees that SDRs may greatly enhance the interoperability of wireless systems. A prime example of the benefits of interoperability for API members is in an emergency response situation, such as an oil spill, where public safety and environmental impact are

critical concerns. SDRs could allow the responsible company to marshal local assets such as the fire department more efficiently to respond to such incidents. SDRs could enable API members to quickly provide local government officials and other important entities with radios capable of communicating on the designated emergency frequency. Alternatively, API members could reconfigure their own radios to communicate on local emergency frequencies. The result of this enhanced flexibility is that emergency response would be greatly facilitated in terms of both speed and capability.

7. Further, assuming SDR technology allows a telecommunications device to change from one frequency, frequency band and/or format to another, users such as API members could configure their mobile fleets to match the use for which they are required at a given time. This could result in the acquisition of less equipment, since mobile transceivers could be modified from time to time to serve multiple functions, voice or data. For example, radio equipment used for voice messages during an initial hydrocarbon production start up could be converted for data operation and left in the field to support a supervisory control and data acquisition ("SCADA") requirement.

C. Safeguards Must be Built-in to Protect System Integrity, Protect Existing Licensees from Interference by Unauthorized Users and Avoid Compromising the Public's Safety

8. The software in an SDR device may allow the device to configure itself to function on nearly any open frequency, creating great flexibility for SDR users. (Notice at ¶ 14.) That same flexibility, however, has the potential to cause interference with other users who may require those same frequencies for previously designated purposes, including emergency response situations. It is vital to API members to maintain designated frequencies that are generally free of congestion and ready for use in their important day-to-day operations, as well as for use under emergency conditions. API members are subject to various statutes, regulations, codes and standards which *require* them to utilize reliable, redundant and secure communications systems. For example, Department of Transportation (“DOT”) regulations and policy governing the transport of hazardous materials require pipeline operators to operate and maintain reliable and secure primary and secondary communications systems. See, generally, 49 C.F.R. §§ 192.615(a)(2), 194.107(d)(1)(ii), 195.401(a), 195.408 and 195.402(c). The practical impact of these regulations is that pipeline operators must have primary and backup systems adequate to handle virtually any type of emergency situation. Interference from SDR devices could potentially undermine the ability of API members to satisfy this critical safety requirement.

9. Additionally, API members depend upon reliable radio systems for oil exploration and production activities, as well as oil field and pipeline management. Reliable radio systems, free from interference, are used to protect life, health and property every day by monitoring and controlling conditions that could result in an accident or other incident if left unattended should those monitoring functions experience interference. Interference by SDRs with communications that support these daily activities could potentially pose a threat to the safe, efficient drilling and pipeline transportation of petroleum products. API thus concurs with the thought expressed by Commissioner Susan Ness that “protection of other spectrum licensees from interference resulting from SDR devices is paramount.” (Separate Statement of Commissioner Susan Ness re: Inquiry Regarding Software Defined Radios.) API urges the Commission to develop safeguards that would prevent SDR operators from using their equipment in a manner that would cause interference to other authorized users. At the very least, for example, there must be certain limitations on the frequency bands in which mass-marketed SDRs are permitted to operate. API also recommends that the Commission encourage SDR equipment manufacturers to develop technology that will minimize the likelihood that malfunctioning or improperly used SDR equipment will cause harmful interference to authorized spectrum users.

D. API Expects that Issues Regarding Technical Feasibility of Software Defined Radio Will Be Addressed by Entities Familiar with Software Technology

10. API members are not software or hardware developers, and thus API expects that the technical issues raised by the Commission, such as equipment features and approval, as well as the feasibility of SDRs and the capabilities and limitations of such systems, will be addressed by software and radio system designers and manufacturers. API is not prepared to comment on these issues at this point, but may do so in subsequent phases of this proceeding.

III. CONCLUSION

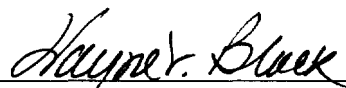
11. API applauds the Commission's efforts to implement this new software technology to promote the interoperability of radio systems and improve the efficiency of the spectrum allocation process. These efforts should allow radio users such as API members not only to use the spectrum with greater flexibility and operational capability, but also to coordinate emergency efforts in situations where communication between API members and diverse groups such as local authorities and environmental agencies is imperative. The Commission must, however, ensure that spectrum used for safety-related purposes and emergency response will be free from interference by the potentially vast numbers of SDR users. To that end, API urges the Commission to include safeguards in its rules and encourage technical development of SDRs in a manner that will prevent

SDR users from interfering with other authorized systems, particularly those used for public safety and/or emergency response functions.

WHEREFORE, THE PREMISES CONSIDERED, the American Petroleum Institute respectfully submits the foregoing Comments and urges the Federal Communications Commission to act in a manner consistent with the views expressed herein.

Respectfully submitted,

**THE AMERICAN PETROLEUM
INSTITUTE**

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